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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/981,360	12/18/1997	Kari Kirjavainen	U 011574-0	3410

7590

04/29/2003

WILLIAM R. EVANS
c/o LADAS & PARRY
26 WEST 61 STREET
NEW YORK, NY 10023

EXAMINER

BRUENJES, CHRISTOPHER P

ART UNIT

PAPER NUMBER

1772

DATE MAILED: 04/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/981,360

Applicant(s)

KIRJAVAINEN ET AL.

Examiner

Christopher P Bruenjes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6,9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Election/Restrictions

1. Claims 13-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.
2. Applicant's election of Group I Claims 1-12 in Paper No. 11 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

3. The abstract of the disclosure is objected to because the abstract is disclosing a certain apparatus for making the product and very little is mentioned about the product claimed. The tubular product is the invention elected and the abstract should pertain to the elected invention. Correction is required. See MPEP § 608.01(b).

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The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

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4. The disclosure is objected to because of the following informalities: as stated above the headings listed should appear in upper case, without underlining or bold type, as a section heading, and the current specification is missing headings.

Appropriate correction is required.

Claim Objections

5. Claims 6-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 6-12 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 2 and 5-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly

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connected, to make and/or use the invention. The limitation that the base layer consists of the soil in the ground is not enabled by the specification to make the invention. Claim 2 defines a tubular product comprising a base layer, which is soil in the ground, a foam intermediate layer, and a plastic innermost layer. However, if the soil is in the ground it is not a tubular product, because a hole in the ground does not have an exterior surface. The disclosure does not enable one of ordinary skill in the art to make a tubular product with an exterior surface from a base layer consisting of the soil in the ground.

Claims 5-12 are rejected as dependent on a rejected claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, the limitation "soil in the ground" renders the claim vague and indefinite because it is not

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understood how a layer of a tubular product can consist of soil in the ground. Also it is not understood what is defined as "ground".

Regarding claim 3, the limitation "metal of plastic-coated metal" renders the claim vague and indefinite because it is not understood if metal or plastic-coated metal is being claimed as the base layer. Also, It is not understood what is defined as metal of plastic-coated metal and how it differs from metal.

Regarding claim 5, the limitation "which is smoothened by the foamed tie layer" renders the claim vague and indefinite because it is not understood if this limitation is referring to a process limitation in which the foamed tie layer somehow smoothenes the inner surface of the base layer, or if the inner surface of the base layer remains rough, but the inner surface of the tie layer is smooth. In an article claim, process limitations receive little patentable weight and therefore if the limitation is referring to the foamed tie layer smoothing the inner surface of the base layer then the claim is determined to define a smooth base layer. For examining purposes the claim is determined to define a base layer with a rough inner surface and a foamed tie layer with a smooth inner surface. Also, it is not understood how rough the inner surface of the base layer is

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to be defined as rough or how smooth the foam and innermost layers are to be defined as smooth.

Regarding claim 6, the limitation "fine filling agent" renders the claim vague and indefinite because it is not understood what is defined as fine filling agent. Does "fine" define the filling agent as powder form or small grains, and if so what is defined as fine. Therefore the claim is determined to define a tie layer containing filler.

Regarding claim 8, the limitation "oriented foam bubbles" renders the claim vague and indefinite because it is not understood how foam bubbles are oriented. Foams are either resilient or rigid and neither of the foams is stretchable without breaking or bouncing back and therefore would not orient. Whether the layer was stretched or not before foaming receives little patentable weight in an article claim, because article claims are only defined by their structure completely finished. Therefore, the claim is determined to define the tie layer comprises foam.

Regarding claims 11 and 12, the tubular product is defined in the claims that 11 and 12 are dependent on as a tubular product having three layers. Claims 11 and 12 define a method of using the tubular product defined in the previous claims, as joining with another similar product. Process of using

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limitations receive little patentable weight in article claims, because articles are defined by their structure alone and not merely stating an intended use of the article. Note claims 11 and 12 do not further define the tubular product, but instead merely state an intended use of the tubular product.

Claims 4, 7 and 9-10 are rejected as dependent on rejected claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-2, 5-9 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Stanley (USPN 4,640,313).

Stanley anticipates a tubular product comprising at least three layers, a base layer, an innermost layer made of plastic, the base layer and the innermost layer having poor adhesion to each other, and a tie layer between the base layer and the innermost layer, which is a foamed material (see abstract). Note the process of making the innermost layer receives little

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patentable weight. The tubular product inherently is placed in the ground when forming pipelines for transporting sewage, water, or slurry and therefore would have a base layer consisting of soil in the ground. The pipe lining is adapted to irregularities at the inside wall of the pipe lined and therefore the base layer is rough, but the tie layer and innermost layer are still smooth. The tie layer contains filler such as copolymerizable ingredients, catalysts, or crosslinking agents (col.8, 1.9-30). The innermost layer and tie layer are composed of polyethylene and the foam has a cross-linking agent making it cross-linked polyethylene (col.7, 1.45-50 and col.8, 1.9-30). The innermost layer is oriented by drawing both axially and radially (col.2, 1.31-36). The tie layer is slightly drawn but is dimensionally stabilized finally upon occurrence of such foaming expansion (col.2, 1.36-39). The tubular product is usable as being joined with another similar product. Note the intended use of a tubular product receives little patentable weight as discussed above in the 35 U.S.C. 112 rejections.

9. Claims 1-5 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Bast (USPN 4,438,056).

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Bast anticipates a tubular product comprising at least three layers, a base layer, an innermost layer made of plastic, the base layer and the innermost layer having poor adhesion to each other, and a tie layer between the base layer and the innermost layer, which is a foamed material (see abstract). Note the process of making the innermost layer receives little patentable weight. The tubular product inherently is placed in the ground when forming pipelines for transporting sewage, water, or slurry and therefore would have a base layer consisting of soil in the ground. The outer layer or base layer is a steel pipe, which is stiffened by corrugations throughout its entire length (col.3, 1.37-40). Corrugated steel pipe has a rough inner surface and radial grooves or ribs. The plastic tie layer made of foam and the plastic innermost layer are substantially smooth on the inner surfaces (col.3, 1.20-50). The foam adheres to the corrugated steel pipe and the plastic innermost layer (col.4, 1.43-50). The tubular product is usable as being joined with another similar product. Note the intended use of a tubular product receives little patentable weight as discussed above in the 35 U.S.C. 112 rejections.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 10-12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stanley (USPN 4,640,313) in view of Donuiff et al (USPN 4,870,111).

Stanley teaches all that is claimed in claims 1-2 and 5-9 and teaches the limitations of claims 11 and 12 as discussed above, but fails to explicitly teach forming the tie layer from grafted polyethylene. Stanley teaches that the foam is a cross-

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linked polyethylene, but not grafted polyethylene. However, Donuiff et al teach that polyolefin foam is more resilient and flexible than polystyrene foam, but has a narrow molding range unless the foam is crosslinked (col.1, 1.36-59). Donuiff et al also teach that moldable crosslinked polyethylene is formed in several ways including adding a crosslinking agent, or radiation (col.2, 1.35-64), but these methods are very expensive. Donuiff et al further teaches that an improved method, which would not cost as much to manufacture and have superior properties, includes taking a silane-modified polyolefin or grafted polyethylene containing a silanol condensation catalyst with a blowing agent to produce moldable foamed beads which cross link internally when exposed to moisture (col.3, 1.31-35). One of ordinary skill in the art would have recognized that a polyethylene foam should be cross linked in order to make the foam more moldable and therefore able to be extruded, and that a grafted polyolefin containing a catalyst is less expensive to form into a moldable cross linked foam than a polyolefin combined with a cross linking agent, as taught by Donuiff et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to substitute a grafted polyolefin of Donuiff et al for the polyolefin of Stanley, in order to make the crosslinking

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process before foaming the tie layer less expensive, as taught by Donuiff et al.

11. Claims 3-5, 6-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanley (USPN 4,640,313) in view of Bast (USPN 4,438,056).

Stanley teaches all that is claimed in claim 1 and the limitations of claims 6-9 and 11-12, but fails to explicitly teach corrugated metal as the base layer of the storm and sewer pipelines. However, Bast teaches that corrugated steel pipes are used as storm and sanitary sewer pipelines, especially when a plastic liner is used on the inner surface of the corrugated steel pipe with a foam tie layer between the inner most plastic liner and the base layer (col.3, 1.20-50). A steel pipe is substituted for a cement pipe because it is lighter and less expensive. A steel pipe is corrugated in order to stiffen the pipe providing the necessary rigidity and strength for a sewage or water pipeline (col.3, 1.37-40). A corrugated pipe, while exhibiting an excellent strength to weight ratio, ease of installation and favorable economics, the corrugations increase resistance to hydraulic flow because of the roughness and is subject to corrosion (col.3, 1.20-28). The foam material tie layer and plastic innermost layer make the inner surface of the

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pipe smooth (col.3, 1.34-50). One of ordinary skill in the art would have recognized that sewer and water pipelines made of smooth, plastic lined, corrugated steel pipe with a foam layer and innermost layer, are substituted for traditional cement and metal sewer and water pipelines, in order to provide a pipe having increased strength to weight ratio, ease of installation and favorable economics, without causing increased resistance to hydraulic flow or corrosion of the pipe.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to use the corrugated steel pipe of Bast as the base layer of Stanley, in order to increase the strength to weight ratio, ease installation and save money compared to traditional cement pipelines, as taught by Bast.

12. Claim 10 and 11-12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stanley (USPN 4,640,313) in view of Bast (USPN 4,438,056) as applied to claims 3-5 and 6-9 above, and further in view of Donuiff et al (USPN 4,870,111).

Stanley and Bast combined teach all that is claimed in claims 1-9 and teach the limitations of claims 11 and 12 as discussed above, but fail to explicitly teach forming the tie layer from grafted polyethylene. Stanley teaches that the foam

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is a cross-linked polyethylene, but not grafted polyethylene. However, Donuiff et al teach that polyolefin foam is more resilient and flexible than polystyrene foam, but has a narrow molding range unless the foam is crosslinked (col.1, 1.36-59). Donuiff et al also teach that moldable crosslinked polyethylene is formed in several ways including adding a crosslinking agent, or radiation (col.2, 1.35-64), but these methods are very expensive. Donuiff et al further teaches that an improved method, which would not cost as much to manufacture and have superior properties, includes taking a silane-modified polyolefin or grafted polyethylene containing a silanol condensation catalyst with a blowing agent to produce moldable foamed beads which cross link internally when exposed to moisture (col.3, 1.31-35). One of ordinary skill in the art would have recognized that a polyethylene foam should be cross linked in order to make the foam more moldable and therefore able to be extruded, and that a grafted polyolefin containing a catalyst is less expensive to form into a moldable cross linked foam than a polyolefin combined with a cross linking agent, as taught by Donuiff et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the applicant's invention was made to substitute a grafted polyolefin of Donuiff et al for

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the polyolefin of Stanley, in order to make the crosslinking process before foaming the tie layer less expensive, as taught by Donuiff et al.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jarvenkyla et al (WO 97/10941) is potentially a 102a reference; Martin (USPN 4,836,586) teaches a sleeve and collar connection of two pipes; Andre et al (USPN 4,964,440); Maimets et al (USPN 5,119,862); Andre et al (USPN 5,096,206).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Bruenjes whose telephone number is 703-305-3440. The examiner can normally be reached on Monday thru Friday from 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 703-308-4251. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Christopher P Bruenjes

Examiner

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CPB

April 24, 2003

Chris Bruenjes

[Signature]
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

4/28/03